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PAPERS OF THE THIRTY-FIFTH ANNUAL SESSION.

RAILWAY INJURIES.

DR. WM. B. MEAD, OBERLIN, KANS.

Railway surgery is of recent date. In reading the history and literature of surgery, I find no noted author on this subject. D. Hayes Agnes, Frank Hamilton and D. Brainard, gave other specialties to the world. Moses Gunn, under whose inspiring lectures I have often been moved, made no special mention of this branch of surgery. The dangers attending locomotion of any kind are apparent; but railway travel is especially hazardous and means to lessen the danger or ameliorate the injuries ensueing therefrom, are of the highest importance.

The progress of modern surgery is a marvel. One hundred years ago the most progressive physician would have declared it to be a visionary and vain thing to attempt to keep a man alive with a broken neck or fractured spine; to give hearing to ears deaf since childhood; to enable persons born blind, to read and realize the finest distinction of color, and those born dumb, to speak. To straighten the figure of the hunch back, which would have made Richard III more sightly in the eyes of Queen Anne; to change the whole contour of the face and give comliness to those born in deformity; or to perform a laparotomy using the bistoury and the needle in the vital regions of the human body without causing death or giving pain. It is then but natural that railway surgery should, to some extent, feel the impetus given to all branches of surgery. It will take some time to develop this line of surgery, just as it requires an act of parliament to get rid of the barber surgeons; the same as it requires now a medical practice act in each state of the union to get rid of these medical healers who claim a special power to heal in the name of religion, but are practicing upon a credulous public, consecrated and mysterious cussedness for personal gain. Mark Twain was once a victim of their heresies. He said he fell from the Alps and broke his arm in several places. A Christian Scientist declared his pain and injury only imaginary.

History, the heritage of the scholar, is rich in language, literature, law, art, war, myth and tradition; but meagre in medicine. Hippocrates from his physician's stall in the market of Athens tried to give emphasis and dignity to our profession.

Looking backward to the time before the Christian era, men died of distemper without the enlightened aid of the physician. There was no diagnostic difference in diseases. They knew nothing of etiology,

pathology and scientific nomenclature. The priest and the barber were the surgeons and the plague a divine affliction. How different now. Our advanced methods give men a chance for life. The average of life has been raised four years and it seems like the wicked will never die. How different it was with our brothers of the dim age long ago who gave up the ghost alone.

The development of railway surgery is one of the recent triumphs along the line of medicine and surgery. We have been studying the laws of nature instead of trying to alter them. By the adoption of the microbe theory of infection and the intelligent prevention of the entrance of poisonous germs into exposed tissues, an entirely new method of procedure was instituted, which has resulted in the saving of countless lives and in the performance of numerous operations which were impossible before.

Now the abdominal and chest cavities, instead of being forbidden grounds for operative venture, are virtually surgical thoroughfares, and the daring blade and skillful hand snatch victory from the hitherto hidden entrenchments of death.

Few men do the very best they can at all times without an inspiring motive that summons their best efforts. The Railway Surgeon knows that what he does may not only be a matter of record, but may involve medico legal questions and must pass the closest scrutiny of experts. He must be able, by his work, to show that he possesses the ordinary knowledge necessary to a successful surgeon. His opinions must be in accord with the opinions of the leading and recognized authorities on surgery. An accurate record of the cause, extent and probable resulting condition of the injuries received by the individual, should be kept. His physical condition, aside from his injuries, should be noted and everything preserved touching the case that would aid in arriving at the truth.

Most of my work in railway surgery might be classed under the head of minor surgery and these cases show the true surgeon as much as the amputations and resections and other major operations do.

The first thing to be observed when called to see a person injured, is to notice conditions as to shock. In case of hemorrhage, raise the limb, wash it clean. If the blood comes in bright red jets, apply an esmarch bandage above the bleeding point just tight enough to control the flow; if vessels are large, ligate them; if blood comes in dark color, apply cloths rung out of hot water. The signs of shock are, insensibility, drooping of the eyelids, feeble breathing, great paleness with cold clammy sweat, a bewildered, stupid condition and feeble pulse. If these symptoms are present he may die soon unless assist-

ance can be given. The shock is combated by heat applied to the whole body. Roll him up in hot blankets, apply bottles filled with hot water; give hyperdermics of whiskey and nitrate of strychnia. The next thing to consider is the primary treatment of the wound. Rigid asepsis should be thorough and scrupulous. The cleansing of the wound is the beginning of wisdom in these cases, for in this primary dressing if germs are excluded, infection is not likely to follow.

Most of the injuries we are are called upon to treat are those of employees, injured while on duty. The patient is begrimmed with soot, grease and cinders, rendering the skin very septic and upon being wounded this dirt is ground into the wound. As a detergent and antiseptic for fresh wounds, spirits of turpentine will be found to be the most valuable agent. Pick out the debris, go down to the bottom of the wound; be thorough. Wash the wound with warm water and a strong solution of bi chloride of mercury. After litigating the bleeding points the wound is ready to be closed. If ragged, do not coapt, but place pledgets of gauze about the edges of the wound; apply drainage by tents of gauze to the bottom of the wound and cover with iodoform gauze followed by plain gauze. Splints may then be applied for support. Let this dressing remain for a number of hours until ready for operation or re-dressing if no operation is required.

Military surgery and railway surgery have many points of resemblance. If not in the nature of the wounds, in the unfavorable localities in which they may happen. If the place of accident is unfavorable to the restoration and comfort of the patient, he must be removed on a stretcher made for the purpose to more propitious quarters for treatment.

In looking over my record book of injuries I find most of the injuries I have treated are of the hand and fingers. The hand is very vascular as blood vessels traverse and radiate throughout every muscular fibre; that unless the finger is crushed or pulpified, sufficient vitality may remain to preserve a healthy, regenerative action. When the fingers are only squeezed, or pinched, or lacerated, amputation, as a primary measure, should never be resorted to. Should you find the first phalanx crushed and the second phalanx lacerated or fractured, while you may be compelled to amputate the first phalanx, by conservative treatment you may save the second.

It may be necessary to give an anesthethic to clean up the wound properly. Conservatism should take the place of radical treatment in injuries of the fingers. Save all the tissues you can in trimming the wound, so you may have ample covering for denuded surfaces so as to allow for the contraction that follows. When a phalanx is left, the

flexor and extensor tendons should be left long enough to be united over the ends of the bone, thus imparting motion to the stump; otherwise the stump would be useless.

Prognosis, as to the permanent loss of the functions of the fingers saved by conservative treatment, should be guarded. Time works wonders and the finger badly lacerated may, by patience, be saved and become useful as well as ornamental.

In May 1900 I was at Colby, Kansas. While sojourning, I was called to assist in the amputation of the foot of an injured passenger. The accident occurred about a mile east of Colby on the Rock Island route. A passenger was forcibly ejected from the train for warlike demonstration that seemed to the conductor justifiable. The passenger suffered a crush of the left foot and a contusion of the right by falling under the train. Nine hours after the injury he had sufficiently recovered from the shock, and Chopart's operation was performed on the left foot; the right foot did not require ampuation. In determining the operation to be performed, there was a discussion as to whether Chopart's or Symes' should be employed. The patient requested that all the foot possible be saved. Chopart's operation is not approved by many surgeons at the present day. They claiming that Symes' is much to be preferred. In this case, however, the operation proved satisfactory as primary healing took place without subsequent tenderness.

In the summer of 1898 I was called to Jennings, Kansas, twenty miles distant, to see a young man who had been beating his way on a freight train. He got off and attempted to get on while the train was moving. He attempted to climb on at the cattle guards near the station and caught his foot and fell, the car wheel passing over his right arm, severing it just above the elbow. The young man was eighteen years of age, six feet tall and weighed 224 pounds; had been a sailor on the high seas and was trying to get back to San Francisco. I found him in charge of an old physician who did not practice surgery. I was not the Rock Island surgeon, but as the young man was without means and I being the county yhysician, I was sent for. I operated eleven hours after the reception of the injury. In this case it was difficult to follow in the amputation a well defined method, but I was certain of these points: That the tissues used in the covering was viable, neither too scant nor too redundant. That the stump, after operation would be capable of pressure without pain. The results in this case were most gratifying. The young man returned to his home in Wisconsin, seven days after the operation.

In all operative interference it is well to remember that in slow

train injuries the tissues, up to the very margin of the lesion may be saved, and every shred viable may be used as a covering; while in fast train injuries, tissues that may appear fair upon closer investigation will be found to be unfit to preserve. Rapid injury plugs the vessels above the ragged end of the injury and makes it imperative that you operate far enough from the margin of the wound to secure fresh, healthy tissue. Primary operations are to be preferred in traumatic cases and within six hours from the reception of the injury, provided the patient is not in collapse, but presents a good pulse and respiration.

I recall one patient who claimed he had fallen from a freight car while trying to climb up the side, just before reaching the top, and hurt his back. The injury was muscular, if at all, for which I used hyperdermic injections of morphia to allay pain. I could not confirm his claim by any physical evidence; but treated him giving him the benefit of the doubt. I thought he was a Falstaff; but he had no serious claims to make for his injures. I dislike to be imposed upon and in the future, the patient who creates in my mind a doubt as to the genuiness of his injury, will find me employing all the methods known to unmask his pretended simulation.

One of the most perplexing questions that come to the railway surgeon is what is known as railway spine. Those injured know the corporations are liable to the extent of the proved injuries. To tell whether the symptoms are real or fictitious is difficult. They have been termed litigation symptoms, easy to assert and difficult to disprove.

In estimating the truth or falseness of the statement, group the symptoms, aggregate them all, notice the patient as to whether he is candid or given to exaggerations. Dercum says, "Exclude all pains the existence of which, cannot be confirmed by any physical evidence and which rest wholly upon the unsupported statements of the patient." All pains, signs of which are evoked without previous warning or suggestion, should be rigidly admitted.

Try to distinguish between deep and superficial pains. Inject plain water at one of the superficial spots and in a short time the seat of pain injected will disappear, while the others above and below will remain. Pain on deep pressure differs from the superficial variety by being less sensitive, less suddenly developed and has no element of hyperaesthesia, it is more diffuse and is more apt to be at the point which has been directly injured. Whereas, the superficial tender spots often have no special relations to the locality of the injury.

Percussion with the rubber hammer over the spine may elicit pain

in a bony structure. You may catch the pretender by unexpected movements, by moving one part of the body while the attention is directed to another part. Try the forward and backward movements and latteral flexion. Torsion of the body by turning the shoulders while the hips are fixed; pressure on the head while the patient is standing or sitting, or by placing the hands on the shoulder, may impart a shock or impulse to the spine which will test the condition of the joints and intervetebral substances. The reality of alleged sleeplessness in difficult to obtain unless the patient is placed in a hospital. Treatment consists in rest and at the same time inspire the patient with hopefulness. The plaster paris jacket to produce absolute rest of the parts is some times indicated.

We have in the United States professional criminals whose nefarious business seems to be to receive alleged injuries from railroads and collect indemnities and damages from railway and accident corporations for injuries they never received. These swindlers would deceive the elect by their cleverness and plausibility, and claim agents and physicians have been their dupes. Careful and accurate diagnosis in railway injuries can only be attained by a profound knowledge of the human structure, its functions and a manifest desire to know the whole truth and nothing but the truth.

EXAMINATION OF SPUTUM IN PULMONARY TUBERCULOSIS WITH A RECORD OF TWENTY-FIVE CASES.

H. Z. GILL, M.D., LL.D., PITTSBURG, KANS.

In Dr. Lionel S. Beale's valuable work, "The Microscope in Medicine," third edition, 1867, London, notice is taken of the early discovery—1846—by Schroeder Von der Kolk, of elastic fibres of the pulmonary tissue in the phthistical sputum at a very early period of the disease. This observation was confirmed by several prominent men in the profession, namely, Drs. Theophilus Thompson, Hughes Bennett, Andrew Clark, Prof. Quokett, and Dr. Beale, himself a master and a leader in the science of microscopy. His language is so explicit, and, as time has proved it to be, so correct, it seems to me quite appropriate to quote briefly here: "The recognition of this (the elastic tissue) is really a subject of greatest practical importance. The microscopical characters are distinct; the structure cannot be confounded with anything else met with in sputum, and the diagnosis to which the practitioner is led, even at a very early period, before the patient or his friends have the slightest suspicion of serious dis-

ease, will be in almost every case in which the structure is observed, but too painfully correct."

I wish to call especial attention to the early period of the disease in which this important and definite manifestation may be discovered, by the proper application of scientific means. Dr. Beal gives a case in which "the elastic tissue was met with at a time when no other signs of phthisis were present." In some cases "the amount of sputum may be very small amounting to not more than half a dozen pellets in twenty-four hours." He says in one case, "it was difficult to persuade the patient that there was anything the matter with her, and the diagnosis rested almost entirely on the fact of the presence of the pulmonary elastic tissue in the pellet of sputum which was subjected to examination."

It will be noticed that all of this important work was done long before the discovery of the pathogenic germ of consumption, the bacillus tuberculosis, and its importance was not at all emphasized in the text-books of that day as it should have been. I have thought it of sufficient interest so examine at least two of our standard text books, English and German, of dates covering the period of 1850 to 1872. The classic English work of Watson, Am. Edition of 1872. vol. II p. 230, sets forth the subject in the following doubtful language: "Practical microscopic observers are sometimes able, I believe, to discriminate 'tubercular corpuscles,' and portions of broken down pulmonary tissue in expectoration of phthistical patients. In this method of diagnosis I must confess that I am inexpert." Niemeyer is more positive, yet he did not enforce the importance of the application of the microscope as he well might have done. In the French edition of his great work, vol. I.,p. 231, he uses this explicit language on the diagnosis of pulmonary tuberculosis: "The elastic fibres in the sputa removes all doubt, that is, in the cases only in which they exhibit the peculiar form of the fibres of the pulmonary cells."

This would seem to be language sufficiently definite to inspire any one to the effort necessary to know positively the condition of his patient, especially in a case of such grave import. But no specific directions are given for the examination, nor is it urged. The first method used, as given by Beale, is the treatment of the sputum with acetic acid. The preferable method, however, that which I adopted at the beginning of these examinations, was recommended by Mr. Fenwick, in 1866—that is, to liquify the sputum by boiling it in *liquor sodae* of the pharmacopœia. When the solid matters, pus globules, fat, etc.,seem to be liquified, pour the liquid into a settling conical glass. Soon the remaining portions, elastic tissue etc., will

fall to the bottom and can be taken up by means of a pipette, placed on the glass slide, covered with a slip and examined with a microscope A sixth or an eighth lense is quite sufficient for the work. When once seen in a good specimen its peculiar appearance can scarcely be mistaken for any other object and will not be forgotten. When found "all doubt is removed" respecting the diagnosis in that patient. This is no difficult task. There is, indeed, some care required in heating; but when the work is done and the tissue found the absolute certainty more than repays all the labor.

Formerly there was a popular impression that if a person had *consumption* there was little or no hope for him. Such impression is far too prevalent yet, both with the profession and with the people. I had, at the beginning of my professional career, very much such an opinion; and indeed this opinion proves too often to be true when considering cases far advanced.

But demonstration to the contrary was more convincing to me than mere theory and popular opinion. In my twenty-five carefully recorded cases, there have been some in which my prognosis was too hopeless, especially, in the item of time, cases so well marked clinically as well as microscopically, that I have become much more hopeful of remedies, hygienic measures, and change of climate. That well defined, clearly marked cases recover from every trace of the tubercular affection is not the question which we are proposing to settle at this time, theoretically or otherwise; but that patients affected with pulmonary tuberculosis do regain vigorous health and live many years we are ready to affirm. The present view, which obtains among writers and observers on this fubject of the mortality, or incurability of tuberculosis, is, that from fifty to sixty per cent of incipient case should recover, of course considered under favorable conditions.

This list contains a small part of the cases which have come under observation in the period covered by the report, namely twenty-eight years but those recorded were either cases of consultation mostly, or for some special reason cases of more than ordinary interest from a diagnostic point of view.

WHAT DOES THE RECORD TEACH?

Case 1—Maggie Fitzgerald, age 20; June 18, 1873. Elastic tissue abundant. This was a well-marked clinical case, under the treatment of an ex president of a state medical society. He said he had seen worse cases get well; but his antiperiodics had little affect; a mistaken diagnosis. Her daily chill and following fever were distressing and consuming. Died, July 21, 1873.

Case 2—J. M. Johnson, age 33; March 26, 1874 and April 11, 1874. Elastic tissue, pieces comparatively large. Prognosis bad. This case had been under the treatment of the same ex-president for some months. Patient came to me for a diagnosis; and was positive in desiring to know what was the matter. A man of business, a railroad agent, was supposed to understand himself and know what he wanted. In a day or two after the examination I told him the result; and when I was out of the office he came again, and seeing the microscopical preparation of case 1, on my table, labeled with date and final termination, he came no more. His wife was very sorry that I had told him, and she said he did not sleep at all the night after learning of his case. He fell into the hands of another physician only to take quinine for his chills and hectic with the result of disturbing his digestion, but with no benefit.

This case taught me that people do not always desire to know what they ask to know; and in later cases I was more careful in revealing the entire facts to the patient himself. Died, June, 1874.

Case 3—Mr. Sutton; age 18; 1874; found elastic tissue; was living six months later.

Case 4—Howard Cutting; age 40; March 20 1875; found no tissue; had been quite sick for months, and complaining for years. Died 1878.

Case 5—Mrs. A. Loftis; age 30; May 27, 1875; elastic tissue found. Died late in the fall of 1875.

Case 6—R. Bohannan; age 42; July 16, 1876; elastic tissue in sputum, but not very abundant. Died in October same year.

Case 7—Sarah Dickerson; age 22; 1876; no tissue found on careful examination. For a time the expectoration was very free. Recovered apparently.

Case 8—John E. Swan; age 34; Nov. 16, 1876; elastic tissue well marked, not abundant comparatively. Died, Feb. 13, 1878.

Case 9—Mariah Fields; age 20; April 8, 1875; elastic tissue rather abundant. Died July, 1875. I was called in to make the diagnosis. A well marked clinical case.

Case 10—Mrs. Joseph Shroeder; age 60; July 24, 1875; elastic tissue, small amount. In this case the laryngial complication became very distressing. Was treated by another physician for chills. Died in the fall of 1875.

Case 11—Frank B. Mott; age 23; 1877: No tissue found; recovered good health.

Case 12—Michael Lahey; age 21; May 18, 1877; elastic tissue in sputum. Died November 8, 1877.

Case 13—Mrs. Loyd English; age 30; October 9, 1879; elastic tissue but sparse. Health poor, but was living September, 1881.

Case 14—W. H. Stoeckel; age 39; May 25, and June 16, 1880; found elastic tissue abundant. Died, August 1881, in Colorado. This case was of special importance because of positive denials of the real nature of his case by the attending physician, who had treated him for months. Under treatment for the real disease he gained in appetite, strength and weight for months.

Case 15—Mrs Michael Cook; age 30; October 11, 1880; elastic tissue, a few large pieces. Died December 1880.

Case 16—Augustus McFain; age 34; May 26, 1881, elastic tissue "rather plentiful." A case of mistaken diagnosis. Died, June 29, 1881.

Case 17—Edward Tremane; age 23; December 1881; elastic tissue rather plentiful. Died January, 1882.

Case 18—Howard S. Bowman; age 36, October 1894; elastic tissue. Died October 23, 1894.

Case 19—Mr. Thos. Haggerty; age 20; March 6, 1895; elastic tissue; laryngial complication. Died April 8, 1895. This case was treated by a traveling quack after the diagnosis was made; and great encouragement was given, but alas! patient took a short ride, took cold, and therefore died. Death certificate, "bronchitis."

Case 20—Jas W. age 45, 1897; elastic tissue. Living in moderate health, April 1901.

Case 21—Mrs. Boafman; age 60; December 1896. No elastic tissue. Got better and removed to Topeka, Kans.

Case 22—Louis Kumn; age 26; June 4, 1897. Pulse 11 A. M. 120; temperature 99 degrees plus; Resp. 40. Elastic tissue, but not abundant. Bacilli detected November 11; died December 24, 1898. Under the use of beechwood creasote and Com. tincture of cinchona he improved in appetite and digestion.

Case 23—Miss Marie Grotheer; age 17; July 6, 1897; elastic tissue; emaciated; has been sick for some weeks; considerable consolidation of right lung; has rather slight cough. Has been treated for remittent fever. A sister died about a year before of comsumption. Died, November 7, 1897. Another sister died about two years later of "comsumption."

Case 24—Prof. Andrew; age 25; Summer of 1897. Elastic tissue. Died at Denver Col. April 19, 1898.

Case 25—Dr. Martha H. Smith, age 30; March 28, and June 14, 1898. Elastic tissue found in the June examination, small pieces. Had two hemorrhages, namely, in March and April 1898. "There is—June—probably a small cavity where there is daily an accumula-

tion." Died, March 9, 1899. Think she should have lived longer under less work, and more rigid treatment and hygiene.

These cases were nearly all consultation cases, and are but a partial list of similar ones which have come under observation in the period covered by the table, but are given because the history could be given with some degree of accuracy as to all the data, result included. Though most of the cases were well-marked, and what would be called, in general, advanced cases, yet some are still living within our personal knowledge; and others, of which we had full knowledge, lived quite a long period. We can recall cases, of which there seemed to be no doubt, who under change of mode of living, more than climate, have lived for decades, and have done, and are doing, an immense amount of literary work.

Great reliance is now placed on the presence or absence of the bacillus tuberculosis, which, however, is not always found. Besides, there is a *prebacillary* period or stage of pulmonary consumption which may be of long duration; and Turban failed to find the bacillus in 59 per cent of 408 cases examined.—Jour. Am. Med. Assoc., Jan. 12, 1901, p. 73.

We may say briefly, that no method should, in general, be relied upon implicitly and exclusively; the clinical symptoms must be fully appreciated in the very early stages; else, most valuable time will be lost to the very great detriment of the patient. Dr. J. M. Anders, of Philadelphia, in a very able article presented in a symposium-has properly emphasized this point of the prebacillary stage of pulmonary consumption in the article to which reference is here made.

It is quite beside my purpose to dwell upon all the methods of examination of sputum, but simply to call attention to the most recent to which attention is now especially directed, to the neglect often of former valuable and reliable data of greatest importance in confirming other symptoms, and fixing the diagnosis, often at an early date.

THE CURABILITY OF INEBRIETY BY MEDICAL TREATMENT.

T. D. CROTHERS, M.D., HARTFORD, CONN.
Superintendent Walnut Lodge Hospital.

The increasing numbers of inebriates in this country who are appealing to medical men for help is an unmistakeable evidence of a new realm of practice. Every general practitioner recognizes this fact, and it is confirmed by the great variety of prescriptions for alcoholism seen in all the modern work on therapeutics. The question of the action and injurious effects upon the body from alcohol is also the topic of an increasing number of papers in both journals and books. The question of medical treatment and care of inebriety is asked and answered in many ways by both scientists and charlatans until the subject has become one of the prominent themes of practical medicine in many medical circles. The "gold cure" delusion with its claims and pretensions has practically disappeared. Like a similar delusion of a century ago called "Perkinism" and his "tractors," which began with the claim of a great discovery by an unknown man. After a few years of boasted cures it passed away and was heard of no more. Perkins claimed that by metallic tractors magnetic currents were generated, which drew out the disease; and from 90 to 95 per cent. of all cases were cured by these means. The "gold cure" promoters asserted that they had discovered a combination of drugs which was a specific for inebriety and from 90 to 98 per cent. were cured by it. Both of these delusions attracted a great deal of attention at one time, and practically the "gold cure" has been helpful in creating new interest in the disease of inebriety and the possibility of cure by the use of drugs and other remedies. How far the "gold cure" treatment has been followed by permanent cures is unknown. Several statistical studies have recently been made in answer to this question. The following is an example: In a study of one hundred inebriates treated at "gold cure" asylums made ten years after the treatment was given it was found that sixty-two per cent. of all the patients were dead. Of this number forty-seven died from drink excess; of the remainder, six died in asylums developing insanity from drink, seven from pneumonia, and two from accident. Of the thirty-eight living, only five were known to be total abstainers. This compares very strikingly with the results of many studies of the great temperance revival movements. In these instances, hundreds of persons have signed the pledge and claimed to be converted and permanently cured. Eventually it has been found that after ten years, not more than from two to four per cent. continued total abstainers. The various tem-

perance revivals which have concentrated so much enthusiasm and hopefulness of cure finally all dwindle down to less than five per cent. of permanent restorations.

In the first asylum for the scientific study and treatment of inebriety at Binghamton, N. Y., in 1874, it was ascertained from a study of the history of eleven hundred cases who had been treated ten years before that over sixty per cent. remained cured, and were at that time abstainers. In other asylums from similar studies and inquiries of patients made ten and fifteen years after treatment, from thirty-five to fifty per cent. remained restored and temperate. Studies of my work and that of others along similar lines in this country and in Europe show conclusively that from thirty to forty per cent. of all inebriates who were under treatment from four to six months, have continued sober ten, fifteen or twenty years after. While these statistics are not final, they are very hopeful and indicate that from a further study and more perfect means of treatment the curability of these cases may take equal rank with that of other diseases.

Inebriety is now recognized as a distinct neurosis due to generation of the ancestors in part, to physical and psychical injuries and also to the corroding and destructive effects of alcohol.

There are certain defects in growth and development, which create peculiar susceptibility to the anaesthetic and paralyzing action of alcohol. Persons of this class have very marked symptoms of neurotic disease.

The continued or occasional excessive use of spirits up to intoxication is not a disease but is a symptom of some central irritation or exhaustion, and also of poisoning and starvation. Many of these cases are self-limited and follow a certain course, dying away after a time.

This is seen in the history of many persons who permanently abstain both from apparent or obscure causes. Thus, one who has repeatedly signed the pledge and broken it will finally under exactly similar circumstances, pledge himself to abstain, and become a total abstainer ever after. Another person will claim to be converted and stop drinking over and over again, relapsing each time, then finally abstain permanently under the same conditions.

Other more striking cures are noted of persons who after a long period of excessive use of spirits, stop at once, and never use them again. They are unable to give any rational explanation or reason for this change; but state that they concluded to stop and did so. The same reasoning and conditions occurred repeatedly before but always without permanent cessation of the drinking. This unexpected change and dying out of the drink symptom is ascribed to many very

insignificant causes and especially to the means and remedies used last. In reality it is due to some physiological change in the brain and nervous system by which the drink symptom becomes exhausted and dies out. Frequently organic disease appears after this change, and always invalidism of various degrees and intensity.

This self-limitation of inebriety should always be recognized in the treatment. If the predisposing and exciting causes can be removed this condition will be encouraged, and may take place at any time. The fact of disease is apparent from a clinical study of many cases. Thus, from a grouping of the conditions which enter into and act as exciting and predisposing causes there appears a marked uniformity in the origin and progress of such cases. When the histories of many inebriates are compared, the same regularity and progressive movement is observed. It may be stated as a fact to which there are few exceptions that all cases of inebriety have a distinct origin and development, progress, decline, and termination. This is frequently so marked that distinct predictions can be made in the prognosis and the case can be traced with nearly the same certainty as typhoid fever or tuberculosis.

In insanity many definite pathologic conditions are traceable. In inebriety a wider, more complex range of causes appear, the line of march is often seen in more general laws of dissolution. Its medical treatment must be based on some clear conceptions of the nature of inebriety, and the conditions present in the person to be treated.

This requires a careful clinical study of the symptoms, tracing them back to causes, and the varied conditions in the progress of the disease. From such a study heredity will appear to be the most frequent early predisposing cause. One of the questions will be, What conditions of life have been most active in developing these inherited tendencies? How can these conditions be checked and prevented?

Another class of cases commonly noted are those due to physical causes, such as injuries and exceptional mental or physical strains and drains.

In a third class inebriety seems to be due to psychical causes, of which the mental contagion of individuals and of conditions and surroundings are most prominent. These causes are often combined and blended together, requiring very accurate study to discriminate the principal factors in each one. These are some of the causes and conditions which provoke the early use of alcohol, and give form and direction to the progress of the case.

The second part of the clinical study of inebriety is the pathological effect of alcohol. What injury has it caused? How far has it

intensified all previous degenerations, and formed new pathological conditions and sources of dissolution? Also, what organs have apparently suffered most seriously from the drink impulse? And, most important of all, how far is the use of alcohol a symptom or an active cause of degeneration? Having ascertained these facts, the medical treatment is the same as in other diseases, viz., the removal of the exciting and predisposing causes and restoration of the vigor of the body.

The first question is the sudden or rapid removal of alcohol. If the patient is alarmed and intensely in earnest to abstain, he will consent to have the spirits removed at once. If he is uncertain, and has delusions of the power of alcohol to sustain life, it may be necessary to humor the patient in some cases. But the removal of all spirits at the beginning of the treatment is always followed by the best results. The reaction which follows can usually be neutralized by nitrate of strychnia, one-twentieth of a grain every four hours, combined with some acid preparation. Sodium bromide in 50 or 100 grain doses every three or four hours will break up the insomnia, and cause sleep the first two nights.

Strong solutions of quassia in ounce doses given every hour soon break up the drink-craving. Solutions of cinchona bark will produce the same results if repeated frequently in large doses.

The withdrawal of spirits should always be followed by a calomel or a saline purge, and a prolonged hot-air or hot-water bath, followed by vigorous massage. Hot milk, hot beef tea, and in some instances hot coffee, are very beneficial. If the patient insists upon a gradual reduction of the amount of spirits used, strychnia, one-twentieth of a grain, should be given every two hours. This will be followed soon by a distaste for spirits. The purge and hot bath should be given every day while the spirits are used. The form of spirits should be changed from the stronger forms of liquors to wines and beers. Some of the medicated wines are useful at this time, or spirits served up in hot milk. There is no danger of delirium from the sudden withdrawal of spirits, particularly where baths and purging are used freely. The two conditions to be treated at this time are poisoning and starvation. The system is saturated with ptomaines from alcohol, and suffers from defective digestion. The nutrition is also impaired and organic growth retarded. Saline or calomel purges, with baths, meet the first condition, and foods and tonics the second. Not infrequently the withdrawal of spirits reveals degrees of brain irritation and exhaustion that are really manias, deliriums or states of dementia and melancholia.

Many of the chronic cases of inebriety reveal dementia when spirits are removed; others show well-marked paresis or tuberculosis. Symptoms which were attributed to the action of alcohol are often found to be due to previous degenerations. In one case the stupid talk and conduct while using spirits burst into marked dementia when the drug was withdrawn.

In another case, the wild, extravagant conduct and boasting of the inebriate appears as paresis when free from spirits.

The removal of alcohol is often followed by tuberculosis, not suspected before, which has been called "galloping" phthisis because it goes on so rapidly to a fatal termination.

Rheumatism and neuritis are very frequently associated both with the excessive or moderate use of spirits.

Diseases of digestion are common; also diseases of the kidneys. The latter are usually masked by alcohol and burst into great activity when it is removed.

These and other organic diseases suddenly come into view, and whether they have existed, concealed by the action of alcohol or have started up from the favoring conditions of degeneration caused by spirits, is not known. The therapeutic requirements much reach out to meet all these unsuspected disease states which may appear at any time.

The removal of spirits in all cases reveals conditions of both physical and psychical degeneration that call for a great variety of therapeutic measures.

The next question is to ascertain the special exciting causes, and remove them, and also to prevent their recurrence.

In the periodic cases the early favoring causes of the drink storm are often reflex irritations from disordered nutrition, exhaustion, and excessive drains or strains. Later, a certain tendency is formed for regular explosions of deranged nerve energy and impulses for alcoholic relief often due to expectancy. This periodicity is often due to causes which may be seen and prevented by remedial measures. In certain cases nutrient and sexual excesses are followed by a drink storm.

In other cases, constipation, over-work, neglect of hygienic care of the body, irregularities of food and sleep, emotional excitements or depressions are followed by the same drink storm or alcoholic craze.

A vast range of psychical causes have been noted. Thus, a residence on the seashore or in high altitudes sometimes provokes this thirst for spirits, and removal to higher or lower planes is followed by its subsidence of it. Many persons never use spirits to excess ex-

cept in large cities or at specially exciting gatherings or on holidays and festive occasions.

Here evidently some defect of the brain, either organic or functional, exists, which should be treated therapeutically. Many of these cases have been cured by change of surroundings as well as medicines.

While the ostensible object of medication is to stop the drink craze this is as far from being curative as the suppression of pain by a dose of opium.

Conditions which cause the disordered nerve force to concentrate in cravings for the anaesthesia of spirits are to be neutralized and prevented before a cure can be expected.

The use of narcotics and drugs to check the desire for spirits at the beginning is temporary and always uncertain. Opium, chloral, and cocaine given freely at this time often simply changes the craze from drink to these drugs which are ever after used in the place of spirits.

The return of the drink impulse at regular or irregular intervals is in most cases preceded by premonitory symptoms which if known enable the physician to use preventive remedies. In certain cases calomel and saline cathartics, with prolonged baths, rest, or exercise, according to the requirements of the cases, have been found preventive. Quassia solutions given at this time frequently break up the desire.

In a certain number of cases patients are unconscious of the approach of the drink storm and hence are more difficult to treat. But when they realize its coming and seek assistance the task is easier. The general principle of treatment is sharp elimination through all the excretory organs, and the use of mineral tonics, with changes of diet and living; also, a particular study of the exciting and predisposing causes and the use of active remedies for their removal. When the drink paroxysm has passed away, then radical constitutional remedies are to be used. The history of syphilis calls for mercury, arsenic, and potassium.

Defective nutrition requires a study of the diet best suited to strengthen and build up the tissues.

Entailments from other diseases, as malaria, rheumatism, and various affections, require appropriate remedies.

Tinctures of any sort are dangerous. The susceptibility to alcohol is so great that the smallest quantity is felt, although it may not always be recognized

Where spirits are taken continuously the system is depressed, all functional activity is lowered and palsy and starvation are present. The removal of alcohol is only a small part of the treatment. The demand for alcohol is a symptom of this progressive degeneration.

Giving remedies to produce disgust for the taste of spirits or to break up the craving for it, is not curative. Apomorphia, mixtures of atropia, hydrastin, and a great variety of allied remedies, are all dangerous. While apparently breaking up a symptom of the disease present, they often actually increase the degeneration by their irritant narcotic properties and depressing action on the organism. The indiscriminate use of these and allied drugs in the various specfics for inebriety is dangerous empiricism. It is the same as giving opium or other narcotics in every instance of pain and suffering irrespective of all conditions; and calling the subsidence of the pain a cure. Thus, in the following case, a periodic after a "gold cure" treatment, developed into acute dementia which ended fatally. In other cases mania, pneumonia, rheumatism or nephritis develop from the chemical suppression of the drink impulse. In all probability the narcotics used were active or contributing causes to the particular organic diseases which followed.

The masked character of inebriety makes it dangerous to use narcotics beyond a certain narrow limit. Cases which have been subjected to active drug treatment to suppress the desire for spirits, are feebler and more debilitated than others. Those who have taken the so called specifics are marked examples, and whether they use spirits again or not are always more enfeebled and degenerate. In all these cases there is so wide a range of causes and conditions that specific routine treatment is impracticable.

Strychnin has recently come into prominence. In some instances where the spirits are withdrawn, its action is pronounced as a stimulant. Given in one-thirtieth grain doses four times a day for a time, then discontinued or given in larges doses for a shorter time, the results are usually good.

In some cases certain susceptibilities to the action of strychnin are noticed, and where the drug is taken to prevent the drink attack, it frequently rouses it, seemingly precipitating the condition which it is supposed to prevent. This is often seen in the muscular tremor and nerve twitchings that evidently come from strychnin when used even in small doses. Strychnin should never be given alone except immediately after the withdrawal of spirits. At other times, combined with cinchona or other vegetable tonic, it is an excellent tonic. Care should be taken to watch its effects on the motor nerves and to be sure that the patient is not unusually sensative to it.

Belladonna, atropia, cannabis indica, hyoscyamus, and drugs of this class have a limited value, and should be used with great caution in states of irritation following the withdrawal of spirits. They are

best given in combination with other drugs for a brief time, and in particular cases.

The bromides are valuable in the same way, and in the same conditions, only in much larger doses than mentioned in the text-books. From fifty to a hundred grains for a single dose are required, always accompanied with hot baths, and never continued more than two or three days. Coal-tar preparations are of uncertain value as narcotics but may be used in certain cases with good results.

In the treatment of cases, after the paroxysm is over, frequent changes of the form of the tonics are most valuable. Iron, phosphorus, arsenic, potassium, and bitter vegetable tonics should be alternated with free intervals for periods of months. The various derangements of the system should be watched and treated with appropriate remedies, and every case should be constantly under medical care.

The facts of the case having been studied, the question of where the medical treatment can be applied to the best advantage must be determined from the case and its surroundings. If at home, the physician must have full control, and his directions be carried out implicitly. When the drink paroxysm appears, the course of treatment must be prompt and exact. In one case the patient goes to bed and is secluded from all sources of excitement; in another he is sent away to the country aud among strangers; in a third case, a few days residence in a hospital or asylum under the care of a physician is sufficient.

Hospital treatment, with its exact care, and physical and psychical remedies continued for a long time, gives the strongest promise of permanent restoration. Wisely adapted medical treatment based on a careful study of each case, makes it possible for the family physician to treat these cases in the early stages with success. In the early stages the family physician should study the exciting and predisposing causes and treat them heroically, using chemical, hygienic, mental and moral remedies freely and persistently.

When chronic states are present, the same heroic, persistent treatment should be carried ont. Often a fatal mistake is made in trusting the patient's own judgment. While his co-operation should be sought, his opinion is always unsafe and cannot be followed.

No single remedy is capable of meeting a wider range of conditions than the Turkish or hot-air baths, with free massage. Next to this are hot and cold shower baths, and hot packs, with free rubbing. Bitter tonics and salines, with regulated diet, are next of importance. Free elimination through the bowels, kidneys, and skin are always essential.

Beyond this the good judgment of the physician should determine when to give narcotics, and when to abandon them, always remembering their danger and very uncertain temporary action. Also that the cessation of the drink craze is only temporary. If this is accomplished by drug and chemical restraint alone, the permanency is very doubtful.

The subsidence of the drink symptom by the removal of the exciting causes and building up the system to greater vigor and health, is the only rational treatment. In this, the highest medical judgment possible and the greatest therapeutic skill are essential to success.

The medical judgment which will determine the exact condition in each case and the possible range of remedies requires—not any one drug or combination of drugs, not so-called moral remedies, not appeals to the will power—but a clear, broad, scientific application of every rational means and measures.

A large number of these unfortunate cases are distinctly curable in the early stages, and later, when chronic conditions come on, the possibility of cure continues to a far greater degree than is commonly supposed.

It is the common observation of everyone that a certain number of cases recover from the apparent application of the crudest empirical remedies and psychical agencies used in the most unskillful way. This fact furnishes the strongest possible reasons for believing that when inebriety shall be studied and treated as a disease more generally by the profession a degree of curability will be attained far beyond any present expectation.

The present empirical stage of treatment should rouse a greater interest and bring the medical treatment of inebriety into everyday practice. Then the family physician and not the clergyman and the quack should be called in to advise.

ALCOHOL AS A MEDICINE.

Does Alcohol as it Exists in Fermented and Distilled Liquors Produce any Real Stimulating or Restorative Effect, if Given in Cases of Shock, Syncope or Sudden Prostration of any Kind? If not, what Remedies are most Effectual in such Cases?

N. S. DAVIS, SR., CHICAGO.

To answer the above questions reliably requires a correct knowledge, concerning the effects of alcohol on the various functions and structures of the human body on the one hand, and of the actual pathological conditions designated as shock, syncope and sudden prostrations on the other. All the numerous and carefully executed experiments, devised for ascertaining the true effects of alcohol on the functions of the living body during the last half of the nineteenth century, by eminent medical men, both in this country and in Europe, have demonstrated with perfect clearness, that it is an *anaesthetic* in the same sense as chloroform and ether, and directly co-operates with them in producing complete anaesthesia. When introduced into the system, either by the stomach, rectum or hypodermically, it is absorbed rapidly and is carried in the blood currents into every tissue and organ of the body.

Some portion of it is eliminated through the lungs and kidneys unchanged; but the greater part unites either with the hemoglobin and albuminoid constituents of the blood and tissues of the body, and in less degree directly with the free oxygen in the blood. By such combinations it diminishes the natural metabolic processes, both of nutrition and waste, and consequently it retards both the oxygenation and decarbonization of the blood through the lungs, and notably lessens the elimination of waste products in the urine. While present in the blood and tissues, it lessens the activity of the leucocytes and increases the injurious effects of all the well known pathogenic bacteria. It also lessens both the sensibility and transmitting power of the brain and nerves, lessens muscular activity and strength, diminishes the depth and efficiency of respiration, and lowers the temperature of the body. All these effects may be demonstrated from a single dose of two or three ounces of whiskey or brandy, or from an equivalent dose of wine or beer; and they do not entirely disappear in less than from 24 to 48 hours. And when the doses are repeated from day to day through long periods of time they cause more or less fatty or fibroid degeneration of tissue, and shorten the duration of life as seen in all cases of chronic Alcoholism.

Neither time nor space will permit me to enumerate the many experiments that prove the correctness of the foregoing statements, but they may be found in a paper entitled "History of Experimental

Investigations, concerning the effects of Alcohol on the Human System by American Investigators" etc., several copies of which were sent with this paper to your secretary.

If a stimulant means something, that, when taken into the living body, increases activity, strength, and efficiency, then alcohol is not a stimulant, for it diminishes the activity and efficiency of every function and force in the living body in direct proportion to the quantity taken.

Tested with the aid of every modern appliance for ensuring accurate results, shows that it diminishes nerve sensibility and transmission; also lessens muscular force, respiratory, cardiac and vasomotor force; lowers temperature; diminishes metabolism; and impairs protoplasmic or vital force, thereby rendering the system less capable of resisting morbid impressions of every kind. By diminishing the sensibility of the nerve cells of the brain and medulla oblongata it lessens the individual's consciousness of cold or pain or weakness, and consequently he thinks it directly warms, comforts and strengthens him in proportion to the quantity he takes, even up to the time that it has so far paralyzed his voluntary muscles that he can neither stand nor walk. It was these deceptive impressions upon the mind of the person taking it, that led to an almost universal use of some variety of alcoholic liquor to protect against undue cold, to promote strength, and increase mental exhileration or activity as a supposed stimulant, both by medical men and the public generally.

But as large doses, or moderate doses, frequently repeated, uniformly caused loss or suspension of both muscular and mental action, with lower temperature and weaker pulse, it was claimed that only small or very moderate doses were stimulant or restorative, while large doses were directly sedative. And the same rule came to be applied to the action of all general anaesthetics and the opiate class of narcotics. For writers on therapeutics very generally designated, both alcohol and opium as stimulants in small doses and sedatives in large doses; but no one has satisfactorily explained how, or at what stage of increase, any of these drugs reverse their own physiological action. And no explanation of this apparent contradictory action was possible until the important advancements made in our knowledge of the functions of the different parts of the brain and medulla oblongata, and their relations to both mental manifestations and the physical functions of respiration and circulation, which have been made during the last half of the nineteenth century.

Perhaps the most important of these advancements are the demonstration of a faculty of mental inhibition or self-control or sense of

propriety, which exercises more or less control over all other mental faculties, and the discovery of the inhibiting function of the vagus nerves in regulating the movements of the heart. The mental inhibition is manifested through the latest formed and most sensitive portion of the cerebral structure, and hence is the first to be notably disturbed by the exhibition of anaesthetic and narcotic drugs. Or more correctly, the effects of alcohol in disturbing both mental and cardiac inhibition are more quickly noticed by the observer, than the effects on other functions; simply because by lessening the sensibility of the vagus nerve, lets the heart beat faster, and diminishing the sensibility of the cerebral cells directly lessens the mental inhibition, and permits the person to try to talk faster but less cautious, and makes him more ready to sing, dance or fight according to his surroundings. This increased frequency of pulse and greater mental excitability with the firm conviction of the individual, that he can do more and do it faster, are just what has induced, both the profession and the people generally, to call alcohol a stimulant through all the past centuries. And yet they are plainly only a part of the paralyzing or anaesthetic influence of the alcohol on the cerebro-spinal nerve centres, which include also the nerve centres of respiration and circulation. At the same time application of the proper instruments shows that the arterioles and capillaries are relaxed, respiratory movements less efficient, nerve transmission of impressions and mental perceptions, both diminished, and muscular strength impaired. Thus demonstrating that the action of the alcohol from the beginning to the end was depressing, instead of stimulating to all the functions of the body and mind, notwithstanding the brief primary deceptive appearances of excitation. And these results of strictly scientific investigations are in exact harmony with human experience on every field of labor, known to civilized man, where total adstainers and moderate drinkers of either fermented or distilled liquors, have been engaged side by side for any considerable length of time.

In every instance, where full records have been kept, they show that the total abstainers averaged more and better work, suffered less from attacks of sickness, and furnished a lower ratio of mortality. Therefore we are compelled to place alcoholic liquors in the same class with chloroform and ether, as anaesthetics directly diminishing nerve sensibility and vital force, in direct proportion to the quantity taken; the brief exhibition of both mental and physical excitement from small doses, being simply the result of diminished mental and cardiac inhibition or control.

The conditions known as shock, syncope and sudden prostration are

universally regarded as dependent directly upon either suspended, or greatly diminished, respiratory and cardiac activity, with vaso-motor and muscular relaxation; generally resulting from some sudden and strongly depressing mental or physical influence. How then is it possible to relieve such conditions by using alcohol or any other anaesthetic, that tends to directly depress the same functions that are already at the point of suspension? Fortunately nine-tenths of all the cases of sudden prostration, faintness or syncope are of temporary duration, even so much so, that before the messenger can bring the whiskey, brandy or camphor bottle the patient is already recovering. Nevertheless he is induced to swallow a little, and those looking on assert that "it brought him out of it nicely;" when in truth, it only irritated his stomach, made his head dizzy, and retarded his complete recovery. If we would aid in removing the depressed condition of respiration, circulation and sensibility that constitutes a serious shock, we should sprinkle cold water upon the face and upper part of the chest, apply alternately cold and hot compresses over the epigastrium and central portion of the dorsal spine, and give a rectal enema of normal salt solution. By so doing, we address our remedies to those parts of the cutaneous surface in most direct reflex relation with the respiratory, cardiac and vaso-motor nerve centres. Every sprinkle or dash of the water or change of the compresses provokes a deeper inspiration and a stronger cardiac systole, while the absorption of the salt water in the rectum adds to the arterialization of the blood, and aids much in giving permanence to the revived respiration, circulation and sensibility. When the patient can swallow, a few spoonfuls of cold water will aid in the process of recovery; and later plain meat broth, salted as much as the patient will relish, may be given in small doses. Care should be exercised to avoid filling the stomach too full, lest vomiting be induced. From the beginning to the end of treatment, the patient should have the most free access to fresh air. No crowd of people should ever be allowed close around a person in shock or fainting, either indoors or out. And no room containing such person should be kept closely shut or too warm. For the getting of more fresh pure air into the lungs and more oxygen through the air cells into the blood, are the essential objects of all successful treatment of the cases under consideration.

Consequently no alcohol or any other anaesthetic should be used in their treatment, for their most direct and constant effects are, diminution of mental consciousness, and lessening of the efficiency of respiration, thereby retarding instead of promoting recovery.

EDITORIAL NOTES.

DR. J. F. MCNAUGHTON, of Jennings, Decatur county, has been appointed physician to the Topeka asylum to fill the vacancy caused by the resignation of Dr. E. W. Minney. Dr. McNaughton is one of the bright young members of the profession who has demonstrated his ability in a successful practice at Jennings.

DR. D. D. WILSON, of Nortonville, is quite seriously ill with typhoid fever. The doctor was preparing to move to Topeka when he became ill. At last reports he was doing as well as could be expected.

THE Shawnee County Medical Society will give a banquet to its members on the night of its annual meeting, February 3d.

THE death of Dr. W. J. Van Eman, of Leavenworth, was announced yesterday. Dr. Van Eman has long been a member of the Kansas Medical Society. He was an able physician and well known to the profession. The cause of death was said to be an infected wound of the finger received during an operation.

INTERNATIONAL SANITATION.—At the Pan-American Congress just held in the City of Mexico, a plan of international agreement for the sanitation of sea coast cities, particularly against yellow fever, has been suggested by an agent sent by Surgeon General Wyman of the Marine Hospital Service. He proposes sanitary improvements of harbors, improved sewerage, soil drainage and paving, and the elimination of infection from buildings. An international sanitary commission should be appointed, comprising five members, a diplomat, a lawyer, a physician and sanitarian, a sanitary engineer, and a commercial representative. To these five it is proposed to add temporarily two to represent the government in whose domain is located the city or town to be investigated or made to conform to sanitary requirements. The duties of the commission would include visits to the cities and reports upon the sanitary measures necessary. If the president of the state in which the unsanitary city is located fails to carry out the recommendations of the commission within a year, then under Surgeon General Wyman's plan, all the republics will impose upon vessels arriving from it an additional tonnage tax and duties upon specified imports from the port, until the sanitary work has been completed.—*Philadelphia Medical Journal.*

THE PRESENT STATUS OF THE SERUM THERAPY.

H. B. HOGEBOOM, M.D., TOPEKA, KANSAS.

Read before the Shawnee County Medical Society, Aug. 5th, 1901.

Due to the rapid advancement of the science of bacteriology together with the aid of the microscope, we know that certain diseases such as diphtheria, typhoid fever, pneumonia, scarlet fever, tetanus, and others, are caused from certain specific micro-organisms, or these particular bacilli throw off toxine which is the immediate cause. Through this valuable discovery certain preparations known as serum, or antitoxine, have been introduced as a preventative or immunization against these special diseases.

In writing this paper it will only be my intention to discuss the advantages, disadvantages, or the progress made, if any, of the serum treatment, and I will not attempt to discuss the pathology of immunity, for I find that there are as many theories advanced upon immunization as there are experiments on antitoxine. While all the diseases that I have mentioned are caused by a specific micro-organism, very few of these bacilli throw off their own toxine that have been discovered. However, this is not true with diphtheria, for we know that this disease is caused by the Klebs Kloffner bacilli, or the toxine thereof. We do not to-day consider that diphtheria antitoxine is an experiment or an uncertainty, but we regard it as one of the positive advances discovered in the practice of medicine, and with many thanks to this scientific advancement, we no longer look upon this disease as one of the most fatal of all the infectious and contagious diseases, nor do we need to pray in Christian Science theory, in order to prevent the spread thereof, for we are acquainted with its history as well as its highly contagious nature; and by the use of antitoxine, together with isolation, we no longer fear this dread disease. Thus we have diminished by the use of this valuable remedy, a disease at one time with a mortality of 40 per cent. to a mild disease of less than 8 per cent.

How gratifying it is to read that out of 5,794 reported cases of diphtheria, the death rate was 12.3 per cent.; and excluding all cases moribund, or dying within twenty-four hours, the per cent. was 8.8. Again out of 4,120 reported cases, and the injection administered during the first three days, the death rate was 7.3 per cent.; and excluding cases as above, 4.8 per cent. In the majority of these cases bacteriological and microscopical examinations were made and the bacilli found, therefore avoiding a discussion as to whether they were dealing with true or false diphtheria.

After the administration of the antitoxine it is wonderful to note the changes produced in the patient. Within twenty-four to thirty-six hours the swelling diminishes, temperature falls, membrane begins to disappear, pulse becomes slower and stronger, and in all the patient's general condition is much improved. The second injection is only necessary upon the recurrence of the symptoms, or as the severity of the case demands. While some have argued that the nervous system is impaired, and others have attributed death from the use of antitoxine, I have never noticed any bad result upon the nervous system, but on the contrary, believe it protects against diphtheritic paralysis. As to death being attributed to antitoxine, Dr. A. Seibert and Dr. F. Schwizer, of New York, after making numerous experiments upon guinea pigs, concluded as follows:

"First. That antitoxine does not seem to be capable of causing threatening symptoms and speedy death, even when introduced quickly into the blood current in very large doses.

"Second. The carbolic acid used in preserving the serum, they found must be in such a weak solution as to be entirely unable to cause the characteristic convulsions, or symptoms, in fatal cases. And the fact Guinea pigs and other animals survive even larger doses of the acid proves that the acid could not have caused the death.

"Third. From their experience they had found that when small quantities of air injected into the body did produce severe disturbances and ultimate cessation of breathing in the animal, and these symptoms being analogous to those present in fatal cases attributed to the serum, these gentlemen concluded that death was caused by the introduction of air in a punctured cutaneous vein."

Out of 3,628 cases investigated by a committee composed of Doctors W. P. Northup, Hoyt, Dryer, and Adams, for the benefit of the American Paediatric Society, they only found three cases that could be attributed to the antitoxine, and these few cases it was not clearly proven that death was caused by the serum.

The unfavorable symptoms that are supposed to be produced by the serum are as follows: Delirium, vomiting, excitement, insomnia, muscular and articular pains. I have noticed these same symptoms in cases where no antitoxine was administered, and have never experienced, excluding a rash, any bad results from the use of the serum.

It has been stated upon good authority that these symptoms are due to a mixed infection often associated with diphtheria, such as streptococci and staphylococci infection, and in these cases of mixed infection it is still an undecided question and the only possible counter indication against the use of the serum.

The amount of antitoxine to be administered varies in various cases, and I think should be governed by the character or severity of the disease, together with the age of the patient. Children under one year, where the membrane is confined to the nasal cavity, will tolerate 1000 to 2000 units. Older patients will tolerate a much larger dose, and in all cases injections should be repeated in from twelve to thirty-six hours as the recurrence of the symptoms demands, or if the symptoms do not subside.

While no secrecy exists in the manufacture of the antitoxine and all have given satisfactory and favorable results, it is essential and of the utmost importance that the highest quality may be maintained and not the greatest quantity with the cheapest process. This has not been my experience with vaccination, and I attribute the dissatisfaction and the unfavorable results, that no doubt some of you have experienced, to quantity and not quality. I have in a number of cases vaccinated and re-vaccinated with glycinated vaccine virus with "no take," and later tried points and have had typical vaccination. Frederick Stearns has placed at our disposal an antitoxine together with a complete hypodermic outfit carefully sterilized, sealed and ready for use. Too much honor cannot be given Mr. Stearns for this valuable and most essential addition. This hypodermic outfit accompanies each package of their serum, and saves not only time and trouble in sterilizing our own syringe, but there is less liability of septic infection.

In regard to the progress, or advantages, in the antitoxine treatment of other diseases, other than diphtheria and tetanus, very few favorable results have been accomplished, and in conclusion will say that we are anxiously awaiting the day when we will have a successful antitoxine for every disease caused by a specific micro-organism, and especially do I allude to those dreadful diseases, carcinoma and tuberculosis.

TUBERCULOSIS.

℞ Pure iodin	gr. xxij	1	500
Pure phosphrus	gr. iv		250
Thymol			
Menthol	aa gr. xxxviij	2	500
Guaiacol	gr. xx	1	250
Sterilized cod liver oil	℥ j⅔	50	000

M. Sig.—Inject one to three syringefuls a day every four to eight days—FLIESBURG.

Bonner Springs Lodge,

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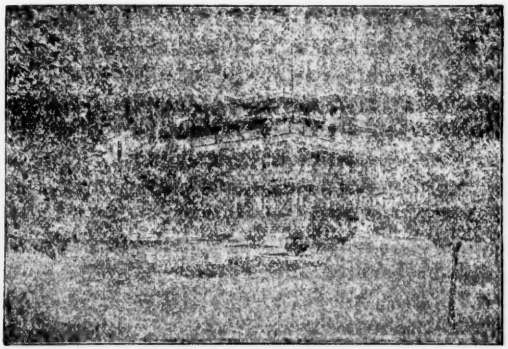

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